

of these single species represents the type of one extensive genus, but of which the other species are unknown to us, not occurring in the restricted area to which our investigations have been confined.

That the limits of genera are not always closely defined, that they shade off as it were imperceptibly at the edges, is nothing more than we might have anticipated. Rigidly defined mathematical genera, with no intermediate species, exist only as phantoms in the brain of the systematizer, and, brought face to face with the facts of nature, such phantoms vanish.

I do not profess to have propounded anything novel in the preceding observations, and I believe it will be found that what I have said is so exactly similar to the remarks on the same subject by Mr. Wollaston in his Treatise "On the Variation of Species," that on that very account it may appear still less necessary to intrude the subject upon the Society. My object, however, has been to bring the subject primarily before the notice of some of the readers of the Society's Transactions, and with this view I have purposely been as brief and as explicit as I could.

XIII. *Observations on the Difficulties attending the Discrimination of the Species of the Genus Stylops.* By
FREDERICK SMITH, Esq.

[Read May 5th, 1856.]

THE morning of the 16th of April, 1856, held out a promise of a good day for collecting bees, and so it proved, as my son on that day obtained not less than fifty specimens of *Andrenidæ*, on Hampstead Heath, in the finest possible condition, together with some examples of *Nomada signata*, *N. borealis* and *N. Lathburiana*. His magazine was a bottle containing bruised laurel, for miscellaneous collecting, but for any specimens of particular interest, I furnished him with pill boxes, of the latter kind he obtained the sexes of *Andrena fulva*, taken "in coitu," and a pair of *Andrena*

varians, under similar circumstances. I had previously captured the sexes of both the species in a similar way, but of the *A. varians* only a single pair. On an examination of the male, captured by my son, I am even more inclined to the opinion that *A. helvola* and *A. varians* constitute but one species, being the representatives of the opposite ends of a chain of varieties. I can detect no difference beyond the greater or less development of the angle, or tooth, at the base of the mandibles of the males, and the females run so insensibly into a string of varieties, that I am unable to draw a line of demarkation for any separation of species.

The most interesting capture, however, was a stylopized specimen of the male of *Andrena Trimmerana*. I readily detected, from the cylindrical portion of the cocoon of a *Stylops*, which projected between the segments of the abdomen, that the individual it contained was a male; I lost no time in extracting it, when it proved to be one of the finest I have seen; one side of the cocoon I observed had a transverse slit, from which I conjectured, that the *Stylops* was in the act of effecting its escape when the bee was captured. Having carefully spread out my insect on card, I at once proceeded to make a careful drawing of it, whilst in its perfect and recent condition.

The results of my examination of this insect, in a state of perfection, I consider very interesting; in the first place, I will point out a few particulars, necessary to be borne in mind when I come to some observations on the various representations of species, in different publications.

When a male *Stylops* is seen in a living state it is a very different creature to that which many may have pictured to themselves, having had no other guide than the caricatures which have appeared of it; and, with one or two exceptions, they cannot be considered otherwise. The texture of all parts of the body of a male *Stylops* is of so delicate a nature, that within two hours after death the entire appearance of the insect is changed; bearing no nearer resemblance to the living creature, than a shrivelled mummy does to the once manly and graceful Egyptian; the head becomes more or less distorted, and the remarkable lateral appendages of the thorax, which in life were rounded on one side and flattened on the other, become entirely changed in form; the abdomen, which when living, or recent, is of an elongated cylindrical form, after death collapses and shrivels up into the crumpled mass which is usually depicted; in fact, such is the

delicate texture of the whole body, that no representation of a dried specimen is of much use in attempting to determine the species; for it is quite certain that the form which many of the parts of the insect will assume in drying, must in a great measure be accidental.

Having made a drawing of my fresh specimen, I was anxious to ascertain the species, for which purpose I consulted the following authorities:—from Kirby's description and figure I only derived the satisfaction of confirming my opinion, that I possessed an undoubted species of *Stylops*; but found it impossible to ascertain whether mine was the *Stylops Melittæ* or not.

The *Stylops Childreni*, figured in "Griffith's Animal Kingdom," is from Nova Scotia; still having the opportunity of examining the typical example, in the Museum collection, I compared mine with it, and found that it very closely resembled it, but is distinguished by a marked characteristic difference in the form of the antennæ. The engraving of *S. Childreni* gives a very indifferent idea of the insect, the relative proportion of parts being very defective.

Stylops Kirbii, is figured by Sowerby in the "Zoological Miscellany," the typical specimen being in the Museum collection; this figure bears very little resemblance to the insect, the thorax is badly drawn, and no one on examining the insect would imagine the figure was intended to represent it.

Stylops aterrima, of Newport; figured in "The Linnæan Transactions," of which I possess the typical specimen; this is a very poor figure,—in one respect, the worst that has appeared; that part which is represented in the figure as the abdomen, is in fact the metathorax; the scutellum is represented, but it has to answer for metathorax as well as itself; the true abdomen, in the specimen, is crumbled up and lies beneath the metathorax. On a careful comparison of my recently captured specimen with the typical one of *S. aterrima*, I believe them to be the same species.

Stylops Dalii; this is figured by Mr. Curtis in his usual beautiful and correct manner; making a little allowance for the shortness of the abdomen from shrinking after death, I have seen no figure to be compared with it; the details are also admirable. There are two specimens of this species in the Museum, presented by J. C. Dale, Esq.; I have therefore compared my insect with them, and I have come to the conclusion that they are identical; it will therefore appear, that on a comparison of specimens, I have arrived at the conclusion that probably they are all of one species; the figures indeed are widely different, but with the exception of

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that by Mr. Curtis,* they bear little resemblance to the insects ; whether my insect is identical with that discovered by Mr. Kirby there is no means of ascertaining ; probably it is, and it may hereafter be ascertained, that we have only one species in this country, in which case I would hope it may retain the name of *Stylops Mellittæ*.

In making the above observations I have had but one aim and object in view, that of endeavouring to prove the necessity of making correct delineations of every specimen of *Stylops* which Entomologists may obtain, either whilst the insect is living, or immediately after death. By these means my opinion of there being only one species in this country will either be established or refuted. In either case a great advantage will accrue ; representations will be available whereby Entomologists will be enabled to ascertain the name of such captures as they may acquire, for I do not think it possible to do so from the best descriptions of these remarkable creatures ; and if the hints which I have given of the necessity of making correct delineations of the insect, and careful magnified outlines of parts, be followed up, then I shall have the satisfaction of knowing that I have not written these observations in vain.

DESCRIPTION OF PLATE XXIV.

- A *Stylops Spencii*, Westw. Trans. Ent. Soc. Lond. Vol. I. ; A 1, tarsus of ditto.
- B *Stylops aterrimus*, Newport, Trans. Linn. Soc. Vol. XX. ; B 1, natural size.
- C *Stylops Trimmerana* (*Mellittæ?*), Smith ; C 1, tarsus of ditto ; C 2, antennæ of ditto ; C 3, head, viewed behind with a portion of the thorax ; C 4, lateral thoracic appendage (*pseudoliton*).
- D *Stylops Childreni*, drawn by F. Smith from the type specimen in the British Museum ; D 1, antennæ of ditto ; D 2, thorax and abdomen of ditto, from plate in Griffiths' *Cuvier's Anim. King.* Vol. XV. Pl. 59 ; D 3, antennæ of ditto, from *Griff. Anim. King.*
- E Head of *Stylops Mellittæ*, Sowerby's *Brit. Miscel.* Vol. I. Pl. 45 ; E 1, thorax and abdomen of ditto.
- F Head of *Stylops Dalii*, Curtis's *Brit. Entom. Fol.* 226, Pl. 226 ; F 1, antennæ of ditto.

• That of *Stylops Spencii*, by Mr. Westwood, in the first volume of "The Transactions of the Entomological Society," I cannot give any opinion upon, not having seen the typical specimen ; but I think the two apical joints of the antennæ must be too small, and the abdomen much too short.